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#9/Reply Brief
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PATENT APPLICATION

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

Koji TANIMOTO, et al.

Docket No: Q67208

Appln. No.: 09/987,671

Group Art Unit: 2855

Confirmation No.: 7499

Examiner: Jewel V. THOMPSON

Filed: November 15, 2001

For: THERMOSENSITIVE FLOW RATE DETECTING DEVICE



**REQUEST FOR RECONSIDERATION**

Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action dated October 23, 2002, reconsideration and allowance of the subject application are respectfully requested. Upon entry of this Request, claims 1-4 are pending in the application. Applicant respectfully submits that the pending claims define patentable subject matter.

As a preliminary matter, Applicant thanks the Examiner for acknowledging that dependent claims 3 and 4 contain allowable subject matter. However, Applicant respectfully requests the Examiner to hold in abeyance the rewriting of these claims until the Examiner has had the opportunity to reconsider the rejected parent claims in light of the arguments presented below in support of the Applicant's traverse of the rejection.

Claims 1 and 2 are rejected under 35 U.S.C. § 102(b) as being anticipated by Murata (USP 5,753,815). Applicant respectfully submits that the claimed invention would not have been anticipated by or rendered obvious in view of Murata.

Claim 1 recites, in part, "a bridge circuit having said first temperature detecting resistor and said second temperature detecting resistor electrically connected together therein, the bridge circuit being adapted to control a heating current of said heat generating resistor to maintain a constant temperature difference between said first temperature detecting resistor and said second temperature detecting resistor, wherein the flow rate within the fluid to be measured is detected by using the heating current, and wherein said bridge circuit receives a voltage that is proportional to the heating current of said heat generating resistor."

Claim 2 recites, in part, "a differential amplifier connected directly to the bridge circuit, the differential amplifier being adapted to divide a voltage across the heat generating resistor and output the divided voltage to the bridge circuit."

The Examiner cites Figures 1, 9 and 11 of Murata for teaching these features of the claimed invention. Applicant respectfully disagrees with the Examiner's interpretation of Murata.

Figure 1 of Murata shows a flow velocity measuring circuit having a bridge circuit adjusting function in a thermo-sensitive flow velocity sensor. This circuit includes a basic transfer route having a bridge circuit 1, an operational amplifier 2 as an amplifying circuit and a buffer 3 as a sensor drive circuit, and further includes a feedback route having a bridge circuit adjusting amplifier 5. The bridge circuit adjusting amplifier 5 has a first input terminal connected

to an output terminal of the buffer 3 via a switch SW3, and a second input terminal connected to a terminal provided with a reference voltage Vref. Between the terminal provided with the reference voltage Vref and the output terminal of the buffer 3 are connected in series a switch SW4 and a heating element Rh. An output terminal of the bridge circuit adjusting amplifier 5 is connected to the bridge circuit 1. With this arrangement, the bridge circuit adjusting amplifier 5 and a circuit in which a resistance value provided at a side of the bridge circuit 1 changes in response to a control voltage Vb (or a control current) outputted from the adjusting amplifier 5, constitute a bridge circuit adjusting unit.

In operation, switches SW3 and SW4 are alternately opened and closed (i.e., never closed at the same time). That is, when bridge circuit 1 is adjusted to be balanced, the switch SW3 is closed (ON), the switch SW4 is opened (OFF) so that an output of the operational amplifier 2 or the buffer 3 is connected to the bridge circuit adjusting amplifier 5 and compared with the reference voltage Vref in order to output the control voltage Vb from the bridge circuit adjusting amplifier 5. While the bridge circuit 1 is balanced, the switch SW3 is opened, the switch SW4 is closed to connect the heating element Rh so that the bridge circuit adjusting amplifier 5 is disconnected during the measurement of the flow velocity.

Accordingly, since switches SW3 and SW4 are never closed at the same time, Figure 1 of Murata does not teach or suggest (1) the bridge circuit receives a voltage that is proportional to the heating current of said heat generating resistor, and (2) the differential amplifier is adapted to divide a voltage across the heat generating resistor and output the divided voltage to the bridge circuit, as claimed.

Figure 9 of Murata shows a circuit provided with an automatic adjusting function of an offset voltage of an operational amplifier 2 and an automatic adjusting function of a bridge circuit 1. The circuit includes a bridge circuit 1, an operational amplifier 2, a buffer 3, a bridge circuit adjusting amplifier 5 and an offset voltage adjusting amplifier 6. The heating element Rh of the buffer is connected to the bridge circuit adjusting amplifier 5 via a switch Sd. Further, the output side of the buffer 3 is connected, via a protective resistor 8, to a switch Se of the offset voltage adjusting amplifier 6 and a switch Sf of the bridge circuit adjusting amplifier 5. The reference voltage Vref is provided to the positive input terminals of the bridge circuit adjusting amplifier 5 and the offset voltage adjusting amplifier 6.

In operation, the switches Se-Sf in the circuit of Figure 9 are switched according to a procedure identified by a timing chart shown in Figure 10. Thus, similar to Figure 1 discussed above, since switches Sd, Se and Sf are never closed at the same time, neither the bridge circuit adjusting amplifier 5 nor the offset voltage adjusting amplifier 6 provide a voltage that is proportional to the heating current of the heat generating resistor to the bridge circuit, and the amplifier is not adapted to divide a voltage across the heat generating resistor and output the divided voltage to the bridge circuit, as claimed.

Lastly, Figure 11 shows a flow velocity measuring circuit which includes a heating-element drive section 63 for driving a heating element Rh, a temperature-difference detecting bridge circuit 64 and a bridge adjusting circuit 65 as bridge adjusting means. The heating-element drive section 63 includes a heating-element drive circuit 60 for driving the heating element Rh and a switch SW1 as a drive stopping unit for stopping a supply of power Vsp to the

heating element drive circuit 60. The bridge adjusting circuit 65 includes a differential amplifier 67 for amplifying a potential difference between output terminals of the bridge circuit 64, a switch SW2, an error detecting amplifier 68, a switch SW3, a bridge circuit adjusting amplifier 69, and a switching timing control unit in the form of a command from a CPU (not shown) for controlling switching timings of SW1, SW2 and SW3 prior to measurement of the fluid.

Accordingly, since the heating-element drive section 63, including the heating element Rh, is not connected to the bridge circuit adjusting amplifier 69, Figure 11 of Murata does not teach or suggest (1) the bridge circuit receives a voltage that is proportional to the heating current of said heat generating resistor, and (2) the differential amplifier is adapted to divide a voltage across the heat generating resistor and output the divided voltage to the bridge circuit, as claimed.

In view of the above, Applicant respectfully submits that independent claims 1 and 2 should be allowable because the applied reference does not teach or suggest all of the features of the claims.

Reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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WASHINGTON OFFICE

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